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Julio Min Fei Zhang

juliozhang107@gmail.com

Columbia University

Daniel L. Heringer

Cleveland Clinic

Gustavo de Oliveira Rodrigues

Universidade de São Paulo

Rafael E. Hernandez Oquet

University of Miami

Rhanderson Cardoso

Brigham and Women's Hospital

Rachel Liu

Yale School of Medicine

Mahan Mathur

Yale School of Medicine

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Direct-Application Clinical Elective Pathways for International Medical Students in the United States: A Systematic Environmental Scan

Julio M. F. Zhang, MD[1], Daniel L. Heringer, MD[2], Gustavo de Oliveira Rodrigues, MD[3], Rafael E. Hernandez Oquet, MD[4], Rhanderson Cardoso, MD[5], Rachel Liu, MD[6], Mahan Mathur, MD[7]

[1] Department of Epidemiology, Columbia University Mailman School of Public Health, New York, NY, USA

[2] Department of Psychiatry, Neurological Institute, Cleveland Clinic, Cleveland, OH, USA

[3] Faculdade de Medicina, Universidade de Sao Paulo, Sao Paulo, Brazil

[4] Division of Hospital Medicine, Department of Medicine, University of Miami Miller School of Medicine, Miami, FL, USA

[5] Division of Cardiovascular Medicine, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA

[6] Department of Emergency Medicine, Yale New Haven Hospital, Yale School of Medicine, New Haven, CT, USA

[7] Department of Radiology, Yale New Haven Hospital, Yale School of Medicine, New Haven, CT, USA

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Corresponding author: Julio M. F. Zhang, MD, Department of Epidemiology, Columbia University Mailman School of Public Health, 722 West 168th Street, New York, NY 10032, USA. Telephone: +1 (646) 351 3312. Email: juliozhang107@gmail.com

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ABSTRACT

Background: International medical graduates constitute a substantial share of the United States physician workforce, particularly in general internal medicine. The AAMC Visiting Student Learning Opportunities (VSLO) platform coordinates visiting placements only for students whose home institution holds network membership; others depend on what each host institution publishes about independent application.

Objective: To identify publicly documented direct-application clinical elective pathways for international medical students, and whether the information needed to apply can be verified from institutions' published materials.

Design: Systematic environmental scan of institutional documents, with criteria specified in advance, duplicate independent screening, third-reviewer adjudication, and standardized extraction requiring documentary support. Searching March to April 2024; re-verification June 2026.

Participants: Four published, dated rosters accessed 27 March 2024: the Liaison Committee on Medical Education directory (158), the American Osteopathic Association directory (66 entries), the U.S. News Best Hospitals Honor Roll (23), and VSLO resources (56).

Main Measures: Institution type, VSLO affiliation, documented USMLE, English-language and life-support requirements, application fee, four-week tuition, and whether each variable was published.

Key Results: Of 303 records, 252 unique programs were screened, 20 met criteria, and 19 retained a verifiable pathway. Thirteen (68.4%) were medical school based and 12 (63.2%) participated in VSLO while also accepting direct applications. Eight (42.1%) documented a Step 1 requirement, one (5.3%) Step 2, ten (52.6%) English-language testing, and three (15.8%) life-support certification. Cost information was available for 18 of 19 (94.7%): tuition ranged from $0 to $6,200 (median $3,000) and fees from $0 to $525 (median $175). Six institutions published insufficient information; three supplied it on request. Programs spanned 13 states.

Conclusions: Documented pathways were few, heterogeneous in prerequisite, and frequently costly, and for some programs key information could not be verified from published sources. The

design records what institutions publish, not what they require.

INTRODUCTION

Supervised clinical rotations are where medical students learn to translate classroom knowledge into patient care, clinical reasoning, and professional conduct.[1,2] In clerkships and comparable electives students participate in the work of a clinical team rather than observing it, and that participation gives the experience its formative value.[3] For students enrolled outside the United States, a period of United States clinical training also produces evaluations and letters from United States based supervisors that residency selection committees recognize and use.[4] International medical graduates fill a substantial share of first-year residency positions and constitute a large part of the physician workforce in general internal medicine and primary care, so the pathway into United States training is also a pathway into the generalist workforce.[5,6]

Access to that pathway is not organized around a single door. The Association of American Medical Colleges Visiting Student Learning Opportunities (VSLO) platform allows participating United States institutions to host visiting students from other countries, and it does so through network membership held by the home institution rather than by the individual student.[7] A student whose school is not a member of the relevant network cannot use the centralized route, however well qualified, and must instead identify institutions that accept an independent application. In practice this means reading institution-specific webpages, inferring eligibility from documents written for other audiences, and assembling a picture of prerequisites, deadlines, and costs from sources that were not designed to be compared with one another.[8]

Existing empirical work on visiting rotations has largely examined United States students moving between United States institutions. Surveys have described host program characteristics and the administrative load visiting students place on teaching institutions,[4] quantified the prevalence and cost of visiting rotations,[9] and questioned the return on investment of the away rotation.[10] A parallel set of studies has analyzed the online information environment directly, assessing how completely specialty away-rotation webpages describe requirements and costs,[11] mapping

rotations listed in the centralized database,[12] and cataloguing funded rotations and the tools that help students find them.[13,14,15] That literature indicates published information is frequently incomplete and supports documentary analysis as a way to study it, but it has not been extended to applicants outside the centralized network, whose dependence on published information is greatest. Reviews of the international medical graduate pathway have called for attention to equity across the transition into United States training,[16] without describing the structure applicants face at the point of entry.

We therefore asked two questions: what direct-application clinical elective opportunities are publicly documented for international medical students in the United States, and whether the eligibility and cost information an applicant needs in order to apply can be verified from the institutions' own published materials. We did not set out to score the completeness of each institution's publication variable by variable, and we report instead which variables could and could not be verified from published sources.

METHODS

We conducted a systematic environmental scan, a structured survey of the information available in a defined domain at a defined time, used in health professions research when the relevant evidence resides in institutional and grey literature rather than peer-reviewed studies.[17,18] Because institutional webpages were the primary data, we adapted the safeguards of systematic review to documentary sources: criteria specified before screening, duplicate independent screening, third-reviewer adjudication, and a standardized extraction form. No EQUATOR Network reporting guideline applies to environmental scans of institutional documents, and STROBE presumes participant-level observational data, so we report the scan against the safeguards described here. We report a documented opportunity structure at two time points, not an intervention effect.

Sampling frame.

The frame was four published, dated rosters, each accessed 27 March 2024: the Liaison Committee on Medical Education directory of accredited United States allopathic medical schools, 158 programs;[19] the American Osteopathic Association directory of osteopathic medical schools, 66

listed entries, which include additional teaching locations of the same college and were screened as separate records;[20] the U.S. News Best Hospitals Honor Roll, 23 hospitals;[21] and VSLO resources, 56 programs. We report each roster and its count so that the frame can be reconstructed by other investigators. PubMed and Embase searches, reproduced in the Appendix, served to identify additional programs and prior descriptive work rather than to pool outcomes. The Honor Roll is a ranked subset of United States teaching hospitals rather than a complete enumeration, so hospitals outside it were not screened; the resulting inventory is a lower bound on the number of direct-application pathways nationally rather than a complete census.

Eligibility criteria.

We included programs based in the United States that offered a clinical elective, clerkship, or comparable supervised clinical rotation; accepted international medical students; and provided an independent direct-application pathway, whether or not the institution also participated in VSLO. We excluded observerships, programs available only through paid private agencies, programs restricted to formal partner institutions, programs with no identifiable application pathway, and programs whose official information was insufficient to verify eligibility. We retained programs that also accepted medical graduates provided currently enrolled international students were eligible. We did not require an explicit statement of academic credit, because institutions reported credit inconsistently.

Screening and extraction.

Two physician reviewers independently screened each program against the predefined criteria. The unit of screening was the program, and multiple webpages describing the same institutional opportunity were treated as one record. Reviewers resolved discrepancies by discussion and a third adjudicated those remaining. We extracted institution and program name, institution type, city and state, program URL, VSLO affiliation, international-student eligibility, availability of direct application, United States Medical Licensing Examination Step 1 and Step 2 requirements, Test of English as a Foreign Language internet-based test (TOEFL iBT) or other English-language requirements, Basic Life Support (BLS) or Advanced Cardiovascular Life Support (ACLS)

requirements, application fee, estimated four-week tuition, and any stated financial aid or fee waiver.

When an institutional webpage did not report a variable we coded it as not reported rather than inferring absence, because the distinction between a requirement that does not exist and one that is simply unpublished determines what an applicant can establish before applying. Every requirement count in this article is therefore a count of documented requirements, not of requirements that institutions actually impose, and a program recorded as not reporting a requirement may or may not impose one. When a webpage did not clearly report key eligibility or cost information we emailed the program. We contacted six institutions and three supplied additional factual information, used only to complete variables the official webpage did not report. The supplemental dataset does not record, value by value, which entries came from a webpage and which from an email reply, and we note this as a reporting limitation.

Re-verification.

Because programs change, we re-verified the 20 programs identified in March to April 2024 during June 2026, reviewing official webpages and updating availability, direct-application status, VSLO affiliation, eligibility requirements, application fees, and tuition. One program no longer met the criteria or lacked sufficient official information to confirm continued eligibility and was excluded. For one included program, Nemours Children's Health in Orlando, international eligibility and the direct-application route were confirmed against dated June 2026 documentation held by the authors rather than from the summary program page alone. We did not repeat the full institutional search, so the June 2026 step updated the originally identified programs rather than constituting a new comprehensive scan.

Analysis.

We summarized categorical variables with counts and percentages, and application fees and four-week tuition with means, standard deviations, medians, and ranges, using the number of programs with available data as the denominator. We described geographic distribution by state and recorded whether cost information was available for each program, because completeness of

publication is one of the features we set out to describe. We did not compute per-variable publication counts for the eligibility requirements, and because the dataset records values rather than their provenance, published values cannot be separated from values completed by email. Our account of verifiability therefore rests on which programs required an email to confirm key variables, not on a variable-by-variable completeness score.

Research team, ethics, and software.

The team comprised seven physicians. Four completed medical school outside the United States and subsequently pursued United States training; three hold United States faculty appointments with teaching responsibility for visiting students. The two screening reviewers had themselves navigated direct application as international applicants, which sharpened their attention to the readability of institutional pages and may also have inclined them to notice omissions, while the adjudicating and senior authors provided the host-institution perspective. We required documentary support for every coded value to limit the influence of these standpoints. The study analyzed publicly available institutional program information together with administrative email responses supplying factual program details; it did not collect data from human participants and did not involve identifiable private information, so it was exempt from research ethics board review and informed consent was not required. A generative artificial intelligence assistant was used for language editing, consistency checking, and formatting only; it was not used to generate data, to screen or extract, or to draft scientific content or interpretation, and the authors take full responsibility for the work.

RESULTS

Program selection.

We identified 303 program records across the four rosters: 158 from the Liaison Committee on Medical Education directory, 66 from the American Osteopathic Association directory, 23 from the U.S. News Best Hospitals Honor Roll, and 56 from VSLO resources. We removed 55 duplicate records and added four further records identified through supplementary searching, giving 252 unique program records for screening. We excluded 232 records because they lacked a verifiable

independent application pathway, were restricted to partner institutions, offered observerships only, were available only through paid private agencies, or otherwise failed to meet criteria. Twenty programs met the initial inclusion criteria, and at June 2026 re-verification 19 continued to provide sufficient official information to confirm an independent direct-application pathway (Figure 1).

The documented opportunity structure.

Table 1 summarizes aggregate program characteristics, and Supplemental Table S1 provides program-level detail with official webpages. Twelve programs participated in VSLO and also maintained an independent direct-application pathway, so most of the direct-application landscape consisted of institutions already inside the centralized system rather than institutions outside it. For an applicant this means the centralized directory is a poor guide to where direct application is possible: membership in the platform neither predicts nor precludes it, and the information has to be sought institution by institution.

Mechanisms used to define eligibility.

Programs did not draw on a shared set of prerequisites. Among the ten programs documenting a TOEFL iBT requirement, four specified a minimum score of 100 and the remainder either set a different threshold or did not state one. Requirements combined differently at each institution, so the practical eligibility question for an applicant was not whether a given credential is needed in the United States, but which subset of credentials a particular institution has chosen to publish as required, in what combination, and by when.

Completeness of publication.

Some institutions stated eligibility, documentation, and fees in one place; others distributed the same information across pages written for domestic visiting students, graduate trainees, or observers, leaving the international applicant to determine which page applied. Six institutions published information we judged insufficient to confirm key eligibility or cost variables, and we emailed all six; three replied. The remaining three neither published the information nor supplied it

on request, which is the position an individual applicant would also be in.

Costs and the disclosure of cost.

Among the 12 programs that charged tuition the range was $50 to $6,200, with a mean of $3,684 and a median of $4,240. These figures exclude travel, housing, visas, health insurance, examinations, English-language testing, and other indirect expenses, all of which fall on the applicant. Few programs described financial aid or fee waivers; we identified one, at Nemours Children's Health, describing a rotation aimed at groups underrepresented in medicine.[22]

Geographic distribution and stability over time.

The 19 programs were located in 16 cities across 13 states, with four in Florida, three in New York, two in California, and one in each of ten further states; 37 states contained no identified program (Figure 2). We did not adjust for the regional distribution of medical schools, teaching hospitals, program capacity, or applicant demand, so this describes concentration among the identified programs rather than regional access. Of the 20 programs eligible in March to April 2024, 19 remained verifiable in June 2026 and one did not. Over roughly two years the documented landscape was stable in size but unstable at its margin, and the single change took the form of information becoming unverifiable rather than an announced closure. One institution, the Geisel School of Medicine at Dartmouth, stated resource limitations in processing international visiting-student requests, one of the few places where the administrative constraint behind such changes was visible to applicants.[23]

DISCUSSION

Nineteen United States programs published a verifiable pathway by which an international medical student outside the centralized network could apply directly for a supervised clinical elective. Read as a structure rather than as a list, three features stand out. Eligibility was assembled institution by institution rather than standardized. The information defining eligibility was dispersed across documents of uneven completeness and in several cases was not published at all. Cost spanned the full range from no charge to $6,200 for four weeks and was disclosed inconsistently.

Eligibility as an assembled requirement.

The prerequisite patterns are difficult to explain as responses to a common standard. Fewer than half the programs documented a Step 1 requirement, one documented Step 2, and slightly more than half documented a TOEFL iBT requirement, with different thresholds among those that specified one. Because unreported variables were coded as not reported, these are counts of what institutions published rather than of what they require. From the host institution's side each combination is defensible, reflecting local supervision capacity, liability judgments, and prior experience. From the applicant's side the same variation appears as a requirement to hold, or be ready to obtain, a superset of credentials whose necessity cannot be known in advance. Preparing for Step 1 and for English-language testing carries substantial time and financial cost, and a student deciding whether to incur it is effectively speculating on which institutions may turn out to be accessible.

What is not published.

Because we coded unreported variables as not reported rather than as absent requirements, we do not assert that a program without a published English-language requirement has none. For an applicant the two are not equivalent, and the second is considerably harder to act on. Three of the six institutions we contacted did not supply the missing information even on direct request, so for those programs the published record was the only record and it was incomplete. Prior content analyses of specialty away-rotation webpages have reported similar incompleteness for United States applicants.[11,12] Whether these gaps affect who ultimately applies or who is accepted is a question this design cannot answer, and we do not claim it.

Cost, and the models that exist for addressing it.

Direct charges alone ranged up to $6,200 for a four-week rotation, before travel, housing, visas, insurance, and examinations. Comparable concerns about the cost of visiting rotations have been raised for United States students;[9,10] for applicants travelling internationally the totals are larger and support more limited. Several specialties have built the mechanism that appears to be missing here: catalogues of funded visiting electives for students underrepresented in medicine, together

with search tools that make them findable.[13],[14],[15] An equivalent consolidated listing of funded or fee-waived opportunities for international applicants would be feasible to assemble.

Implications for practice and policy.

Four changes follow from what we observed, each within the control of a single institution. Publish eligibility for international applicants on one page, stating explicitly whether direct application is accepted alongside centralized application, since platform membership does not tell an applicant this. State every prerequisite and threshold, including the absence of a requirement, so applicants can distinguish silence from exemption. Publish a complete fee table covering application fee, tuition, and mandatory institutional charges, and state what is excluded. Where financial support exists, describe it in the same place. At the system level, a maintained listing of direct-application and funded opportunities would reduce duplicated searching. Because internationally trained physicians supply a substantial part of the generalist workforce, the clarity of this entry point is a workforce question as well as an educational one.

Limitations.

Program availability, fees, and requirements change quickly, so our findings describe a March to April 2024 scan with June 2026 re-verification rather than a maintained directory. Because we did not repeat the full search at re-verification, programs that became available afterwards were not captured. The hospital roster was a ranked subset rather than a complete enumeration of United States teaching hospitals, and institutions report information inconsistently, so despite duplicate screening we may have missed eligible programs and our count is best read as a lower bound. The supplemental dataset does not distinguish values taken from webpages from values completed by email, and we did not record which items remained unpublished at the three institutions that did not reply. Public institutional information did not allow us to determine program capacity, acceptance rates, applicant demographics, or residency outcomes. Institutions used the terms visiting student elective, clerkship, clinical elective, and rotation inconsistently, which required interpretive judgment during screening. Finally, we did not capture informal rotations arranged directly with individual physicians or departments, which are by definition undocumented.

Conclusion.

Direct-application clinical elective opportunities for international medical students in the United States appeared limited in number, heterogeneous in documented prerequisite, unevenly documented, geographically concentrated, and frequently costly, and for several programs the information an applicant needs could not be verified from published sources at all. The absence of a common information standard shifts the work of comparison onto applicants. Institutions that host international visiting students can address a substantial part of this by making eligibility, fees, deadlines, and application routes explicit, complete, and easy to compare.

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CONFLICT OF INTEREST

The authors declare that they do not have a conflict of interest. No author or author institution has received payments or services from a third party for any aspect of the submitted work.

DATA AVAILABILITY

All data produced in the present study are contained in the manuscript. The program-level dataset generated and analyzed during the current study, including official program webpages, eligibility requirements, application fees, and four-week tuition estimates after June 2026 re-verification, is presented in Supplemental Table S1. Additional extraction detail is available from the corresponding author on reasonable request.

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LEGENDS FOR FIGURES

Figure 1. Selection of United States programs offering an independent direct-application clinical elective or clerkship pathway for international medical students. The unit of screening was the program. AAMC indicates Association of American Medical Colleges; LCME, Liaison Committee on Medical Education; VSLO, Visiting Student Learning Opportunities.

Figure 2. Location of the 19 included programs, by city. Marker area is proportional to the number of programs in each city. Locations are those verified in June 2026; the map describes concentration among the identified programs and is not adjusted for the regional distribution of medical schools, teaching hospitals, program capacity, or applicant demand.

Table 1. Characteristics of 19 United States clinical elective and clerkship programs offering independent direct application to international medical students, after June 2026 re-verification

Characteristic	Result
Institution type	
Medical school based	13/19 (68.4%)
Hospital based	6/19 (31.6%)
VSLO affiliation	
VSLO affiliated and also accepted direct applications	12/19 (63.2%)
Not VSLO affiliated	7/19 (36.8%)
Documented eligibility requirements	
Documented USMLE Step 1 requirement	8/19 (42.1%)
Documented USMLE Step 2 requirement	1/19 (5.3%)
Documented TOEFL iBT requirement	10/19 (52.6%)
Minimum TOEFL iBT score of 100 among programs documenting TOEFL	4/10 (40.0%)
Documented BLS or ACLS certification requirement	3/19 (15.8%)
Cost information	
Application fee data available	18/19 (94.7%)
No application fee	5/18 (27.8%)
Application fee, mean (SD)	$193 ($179)
Application fee, median (range)	$175 ($0 to $525)
Four-week tuition data available	18/19 (94.7%)
No tuition	6/18 (33.3%)
Four-week tuition, mean (SD)	$2,456 ($2,269)
Four-week tuition, median (range)	$3,000 ($0 to $6,200)
Neither application fee nor tuition	3/18 (16.7%)

Counts of requirements are counts of requirements documented on the official program webpage. Percentages use 19 programs as the denominator unless a different denominator is shown. ACLS indicates Advanced Cardiovascular Life Support; BLS, Basic Life Support; SD, standard deviation; TOEFL iBT, Test of English as a Foreign Language internet-based test; USMLE, United States Medical Licensing Examination; VSLO, Visiting Student Learning Opportunities.

Supplemental Table S1. Program-level characteristics of the 19 United States clinical elective and clerkship programs offering independent direct application to international medical students, after June 2026 re-verification

Institution or program	Type	City, State	VSLO	Step 1	Step 2	English-language requirement	BLS/ACLS	Fee, US$	Tuition, US$
University of Illinois College of Medicine (1)	School	Chicago, IL	No	Not reported	Not reported	Yes (84, 24 speaking)	Not reported	0	3,500
Cleveland Clinic (2)	Hospital	Cleveland, OH	No	Yes	Not reported	Yes	Not reported	400	0
Emory University School of Medicine (3)	School	Atlanta, GA	Yes	Yes	Not reported	Yes	Not reported	525	4,500
Florida International University Herbert Wertheim College of Medicine (4)	School	Miami, FL	No	Not reported	Not reported	Not reported	Yes	300	3,000
Icahn School of Medicine at Mount Sinai (5)	School	New York, NY	Yes	Not reported	Not reported	Yes (22 each)	Not reported	500	4,000
Kaiser Permanente (6)	Hospital	Oakland, CA	Yes	Yes	Not reported	Not reported	Not reported	0	0
Marshall University Joan C. Edwards School of Medicine (7)	School	Huntington, WV	Yes	Yes	Not reported	Not reported	Not reported	Not reported	Not reported
Memorial Sloan Kettering Cancer Center (8)	Hospital	New York, NY	No	Yes	Not reported	Not reported	Not reported	100	0
Nemours Children's Health (9)	Hospital	Orlando, FL	Yes	Not reported	Not reported	Not reported	Not reported	0	0
Orlando Health (10)	Hospital	Orlando, FL	Yes	Yes	Yes	Not reported	Not reported	50	0
Sinai Hospital (11)	Hospital	Baltimore, MD	No	Not reported	Not reported	Not reported	Not reported	0	0
Stanford University School of Medicine (12)	School	Palo Alto, CA	Yes	Not reported	Not reported	Yes (100)	Not reported	300	6,200
University of Alabama at Birmingham Marnix E. Heersink School of Medicine (13)	School	Birmingham, AL	Yes	Not reported	Not reported	Yes (100, 22 speaking)	Not reported	350	5,200
University of Florida College of Medicine (14)	School	Gainesville, FL	No	Yes	Not reported	Not reported	Yes	50	4,480
University of Kansas Medical Center (15)	School	Kansas City, KS	No	Not reported	Not reported	Yes (57)	Not reported	250	1,000
University of Pittsburgh School of Medicine (16)	School	Pittsburgh, PA	Yes	Not reported	Not reported	Yes (100)	Not reported	0	4,500
University of Texas Southwestern Medical School (17)	School	Dallas, TX	Yes	Yes	Not reported	Not reported	Yes	150	50
Weill Cornell Medicine (18)	School	New York, NY	Yes	Not reported	Not reported	Yes (100)	Not reported	300	3,000
Yale School of Medicine (19)	School	New Haven, CT	Yes	Not reported	Not reported	Yes	Not reported	200	4,775

Values were verified on the official program webpage in June 2026. "Not reported" indicates that the webpage did not state the item; because unreported variables were coded as not reported rather than as absent, these entries must not be read as confirming that no requirement exists. VSLO affiliation is a verified status rather than a documented requirement, so "No" in that column means not affiliated. Fees are in U.S. dollars and tuition is the estimated charge for a four-week rotation. Numbers in parentheses key each program to the webpage listed below. BLS indicates Basic Life Support; ACLS, Advanced Cardiovascular Life Support; VSLO, Visiting Student Learning Opportunities.

Program webpages

1. University of Illinois College of Medicine. https://medicine.uic.edu/education/international-education/international-visiting-students/

2. Cleveland Clinic. https://my.clevelandclinic.org/departments/elective-program

3. Emory University School of Medicine. https://med.emory.edu/education/admissions/visiting/index.html

4. Florida International University Herbert Wertheim College of Medicine. https://medicine.fiu.edu/academics/international-medical-student-program/apply/

5. Icahn School of Medicine at Mount Sinai. https://icahn.mssm.edu/education/students/registrar/electives/visiting-abroad

6. Kaiser Permanente. https://residency-ncal.kaiserpermanente.org/med-students/im/

7. Marshall University Joan C. Edwards School of Medicine. https://jcesom.marshall.edu/students/visiting-students/

8. Memorial Sloan Kettering Cancer Center. https://www.mskcc.org/hcp-education-training/medical-students/elective

9. Nemours Children's Health. https://www.nemours.org/education/orlando-medical-student-rotations.html

10. Orlando Health. https://www.orlandohealth.com/medical-professionals/graduate-medical-education/clerkship-programs

11. Sinai Hospital. https://www.lifebridgehealth.org/main/medical-school-electives

12. Stanford University School of Medicine. https://med.stanford.edu/clerkships/international/ivs-how-to-apply.html

13. University of Alabama at Birmingham Marnix E. Heersink School of Medicine. https://www.uab.edu/medicine/international/international-programs/international-visiting-medical-students

14. University of Florida College of Medicine. https://osa.med.ufl.edu/students/visiting-medical-student-clerkships/international-visiting-student-program/

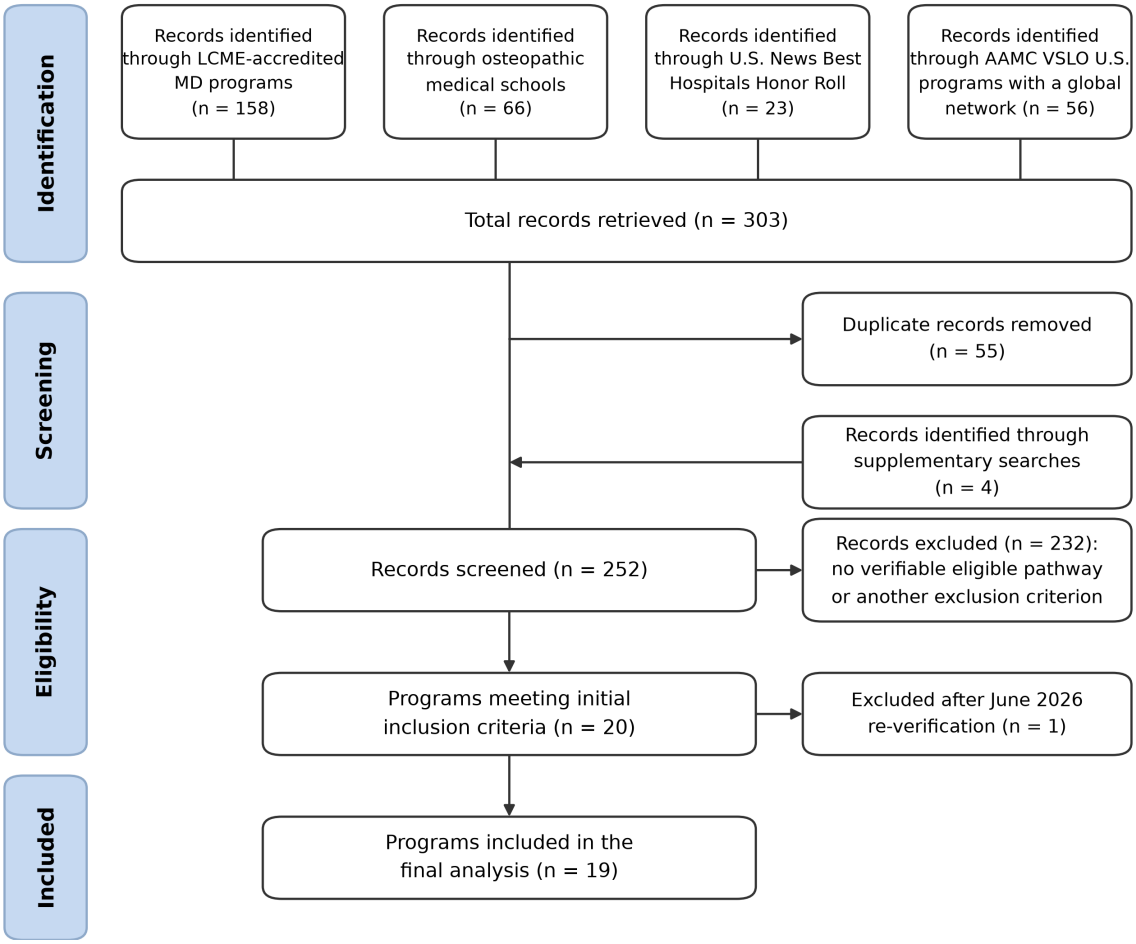
15. University of Kansas Medical Center. https://www.kumc.edu/academic-and-student-affairs/departments/office-of-international-programs/inbound-programs/information-for-students/clinical-electives-program/school-of-medicine-clinical-electives-program.html

16. University of Pittsburgh School of Medicine. https://live-researchprograms-medschool-pitt.pantheonsite.io/international-visiting-student-program

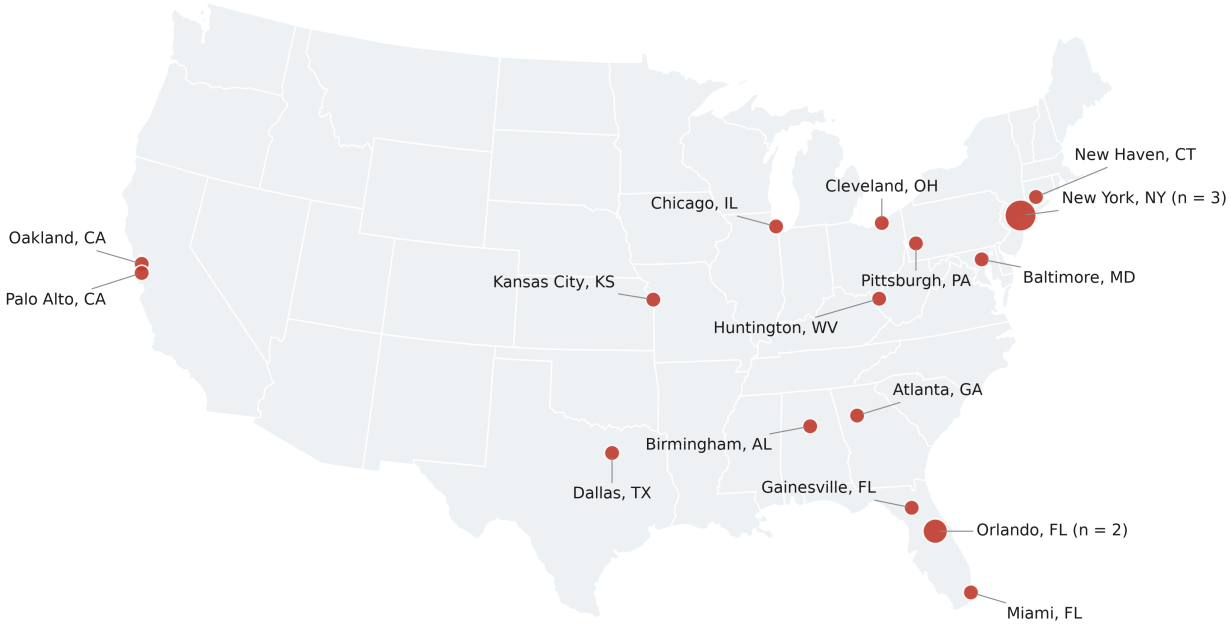
17. University of Texas Southwestern Medical School. https://www.utsouthwestern.edu/education/medical-school/admissions/visiting/international.html

18. Weill Cornell Medicine. https://international.weill.cornell.edu/visiting-international-students

19. Yale School of Medicine. https://medicine.yale.edu/md-program/visiting-students/international/


Identification
Screening
Eligibility
Included
Records identified through LCME-accredited MD programs (n = 158)
Records identified through osteopathic medical schools (n = 66)
Records identified through U.S. News Best Hospitals Honor Roll (n = 23)
Records identified through AAMC VSLO U.S. programs with a global network (n = 56)
Total records retrieved (n = 303)
Duplicate records removed (n = 55)
Records identified through supplementary searches (n = 4)
Records screened (n = 252)
Records excluded (n = 232): no verifiable eligible pathway or another exclusion criterion
Programs meeting initial inclusion criteria (n = 20)
Excluded after June 2026 re-verification (n = 1)
Programs included in the final analysis (n = 19)

Programs clustered in Florida and the Northeast; 37 states had none



Marker area is proportional to the number of programs in each city (n = 19 programs, 16 cities, 13 states)

APPENDIX. SEARCH STRATEGIES

PubMed, searched March to April 2024:

("international medical student*"[Title/Abstract] OR "foreign medical student*"[Title/Abstract] OR "visiting medical student*"[Title/Abstract] OR "international medical graduate*"[Title/Abstract]) AND ("clerkship*"[Title/Abstract] OR "clinical elective*"[Title/Abstract] OR "visiting elective*"[Title/Abstract] OR "clinical rotation*"[Title/Abstract] OR "away rotation*"[Title/Abstract]) AND ("United States"[Title/Abstract] OR "U.S."[Title/Abstract] OR "US medical education"[Title/Abstract])

Embase, searched March to April 2024:

('medical student'/exp OR 'medical student*':ti,ab OR 'international medical student*':ti,ab OR 'foreign medical student*':ti,ab OR 'visiting medical student*':ti,ab) AND ('clinical clerkship'/exp OR clerkship*:ti,ab OR 'clinical elective*':ti,ab OR 'visiting elective*':ti,ab OR 'clinical rotation*':ti,ab OR 'away rotation*':ti,ab OR observership*:ti,ab) AND ('united states'/exp OR 'United States':ti,ab OR 'U.S.':ti,ab OR US:ti,ab)

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- SupplementaryMaterial1.docx